

past summer, in explorations for the Geological survey, I found that the strata of a considerable tract of country, certainly many, probably hundreds of square miles in extent, lying in western Colorado and eastern Utah, were packed with fossil insects as closely as at Florissant, where they occupy a lake basin of relatively small proportions: whether these new localities will excel or even equal that place in the variety of their fossil treasures, is yet to be determined; but there can hardly be any doubt that we shall soon be able in our western territories to rehabilitate successive faunas as successfully as has been done

with many of our vertebrate types, and as has not yet been done for insects in any country in the world. Nor are we confined to our later beds; insect deposits have now been found in a score of places in our extensive carboniferous series, and it is in no way improbable that we may find our own Comentry to double the value of the French discovery. What we really need is a score of trained workers to "go in and possess the land." No one would welcome them more heartily than one who is almost a solitary worker in the American field.

## THE AMERICAN PLUM BORER 'EUZOPHERA SEMI-FUNERALIS' WALK.

BY STEPHEN ALFRED FORBES, CHAMPAIGN, ILL.

Although various boring insects have occasionally attacked the plum, these have been species whose principal injuries are done to other trees, and no distinctive plum borer has hitherto been known in this country. Among these incidental enemies are the peach borer (*Sannina exitiosa*) the flat-headed apple-tree borer (*Chrysobothris femorata*) the so-called pear-blight beetle (*Xyleborus pyri*), and one of the twig borers (*Elaphidion villosum*). Somewhat recently a newly imported European bark beetle, *Scolytus rugulosus*, has attacked a variety of fruit trees, the plum among them, but by none of these insects has any constant and serious injury been done to the latter fruit, so far as I am

now aware. In a species first described (in this country) in 1887, and whose immature stages have remained unknown until the present time, we have our first example of a borer devoted, so far as now known, to the plum alone.

This species was first reported to me as injurious 21 August 1887, in a letter from Farmingdale, Sangamon county, Illinois, accompanied by a few borers found in young Chinese plum trees (*Prunus simoni*), one of which was nearly killed by them.

The attack was described as most general near the forks of the trees, especially at the bases of the lower limbs, but the larvae were sometimes found an inch, or less, within the earth. The

smaller ones were near the surface of the bark, sometimes just under the thin outer film; but others were next the wood. As many as fifty were taken from a single tree, the bark here being killed in large irregular patches.<sup>1</sup>

Living borers received 3 November were about half an inch in length, of a greenish dusky color, with only a few scattered hairs springing from small dark specks. The head was reddish brown, with a darker triangular patch in the middle, and the top of the first segment behind the head, the cervical shield so called, varied from yellowish to pitchy, more or less shaded with brown, but with a median yellow patch. This borer has, of course, the three pairs of legs and the fleshy prolegs (ten in number) of the caterpillar. From the peach borer, whose structure is similar, it may be distinguished by its dusky color (the other being white), its smaller size when full grown, and, with a glass, by the hooks on the prolegs. In the peach borer the ends of the soft stump-like prolegs are provided with small brown hooks, arranged in two opposite curves discontinuous at their ends, each of a single row; while in the new plum borer the corresponding hooks form a complete ring, nearly covering the end of the leg.

Kept in a breeding cage and supplied with the chips and twigs of the plum trees, our larvae spun small webs in

<sup>1</sup> I have found mention of the larval habits of only two other species of this genus (both exotic), one (*E. cinerosella*) living on wormwood (*Artemisia*), in Europe, and the other (*E. zellerella*) bred from dates.

which they passed the winter. By 3 May a part of them had pupated, and 28 and 29 May two winged moths<sup>2</sup> emerged, all the others failing.

These moths were small grey insects, the extended wings measuring about eight-tenths of an inch. The fore wings were reddish behind (within); the hind wings were plain.

Other moths of this species were taken several times at the electric light in 1886, 1887, and 1888, the dates of their occurrence ranging from 5 May to 24 August. The greater part, however, were collected in May and June, and this is doubtless the period of the greatest prevalence of the winged form. The time and place of oviposition are unknown.

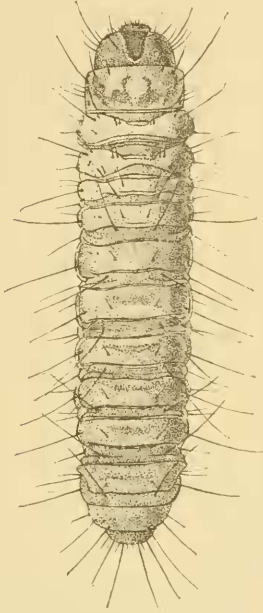
In brief, the species is apparently single-brooded; passes the winter as a larva in the tree; pupates in May; emerges in May and June, and may continue to lay eggs through July and August.

#### DESCRIPTION.

*Larva*.—The general appearance of this larva is that of a dusky somewhat hairy caterpillar, paler beneath, with reddish brown head, darker in the middle, and variegated cervical shield. Principal hairs conspicuously long and slender. The head is brown, with a lateral black blotch behind the eyes, smooth, much darker on the slightly depressed frontal area, this bordered by depressed black sutures, outside which, at a little distance, is a V-shaped fine

<sup>2</sup> Determined as above by Prof. C. H. Fernald.

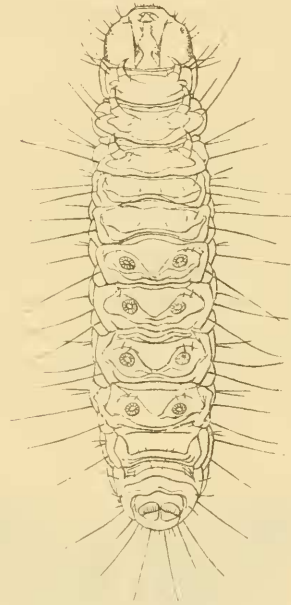
white line. *Antennae* three-jointed; first joint very large, broadly conical; second thick, oval, with a very long stout hair at outer side of tip; the third minute. *Ocelli* five, black, placed behind the antennae in a curve opening downward.



*Labrum* broadly emarginate, with rounded lobes. *Maxillae* and *labium* pale beneath, with dark sutures strongly contrasting with adjacent parts of the head. *Mala* and *palpi* brown. *Labial palpi* minute. *Maxillary palpi* three-jointed, large; first joint nearly as thick as the *palpiger*, and about as broad as long; second joint cylindrical, width two thirds the length; third joint taper-

ing, about two thirds as long as the second.

Body with six conspicuous rows of long pale hairs, longest on the posterior segments, one hair of each row to each segment, each borne on a minute black piliferous tubercle scarcely as large as the spiracle. One row above spiracles, another equally distant below, and two subdorsal rows. Other smaller hairs irregularly distributed.



*Cervical shield* yellow, smooth, with a few scattered hairs and two curved brown blotches, one on each side, separated by a yellow median spot. *Anal plate* coriaceous, brown, heart-shaped, with six long stout hairs at its posterior margin. Posterior segments without

spines or tubercles at hinder margin, differing here from the peach borer. Spiracles black, nearly circular, anterior pair but little larger than the remaining eight, last pair not exceeding the eighth in size.

*Thoracic legs* pale reddish brown externally, paler within, with dusky tips. Each proleg except the last pair with a complete close circlet of large hooks, and several smaller ones besides, and also a horny black central disk or tubercle within the ring. Last pair with a single half circlet of very strong close-set hooks.

*Imago.*—Expanse 20 to 25 mm. Head and thorax dusky gray with bright bronze reflection. Abdomen similar, and also brightly bronzed, but with edges of segments pale. Fore wings light gray, with brownish red and black markings. Posterior two thirds of basal field brownish red, with scattered reddish scales along the costa also, the reddish tint deepest along the middle of the wing. Basal line near



the middle of the wing white, sometimes obsolete posteriorly, making, when complete, two external and three internal angles. Middle field black mixed with

gray except at posterior margin, where it is largely suffused with reddish brown. White scales usually forming distinct discal spots, in one case broadly ringed with black. Outer line variable; when distinct, with two internal and one external angles. Commonly distinctly bordered with black within, and followed without by a reddish shade (except near costa, where this merges in black, which is broadly bordered by light gray). A marginal black line, commonly broken by veins. Fringe dusky, with white line at base. Hind wings smoky, with black marginal line and dusky veins, and fringe with white basal line followed by a dusky band, beyond which it is paler. Surface of hind wings considerably bronzed, the fore wings less so. Beneath, wings fuscous bronzed. Outer field of fore wings somewhat paler, hind wings gradually darkening outward.

Antennae dark; proboscis gray; palpi dusky bronzed.

Described from twelve Illinois specimens.

Distribution; Colombia, S. A. (Zeller), Florida, Texas, Colorado, Utah, Washington. Pretty general throughout the eastern United States and Canada.—Hulst.

#### LITERATURE.

The species was first described in 1863 as *Nephoptyx semi-funeralis* by Walker in the British Museum catalogue, part 27, p. 58; and again in 1882, according to a note kindly sent me by Mr. Hulst, as *Euzophera impletella*,

Zeller,<sup>1</sup> this description being based on specimens from Colombia, S. A. In this country it was described by Hulst in 1887 in *Entomologica Americana* (v. 3 p. 137) as *Stenoptycha pallulella*.

The original description of the genus was given by Heinemann under the name *Stenoptycha*, in 1865, in his work on the lepidoptera of Germany and Switzerland,<sup>2</sup> but as this generic name

was preoccupied by Zeller,<sup>1</sup> the genus was rechristened *Melia* by Heineman, on a later page of the same work.<sup>2</sup> *Melia* proved, however, also to be preoccupied<sup>3</sup> as noted by Zeller in 1867, and the current *Euzophera* was then finally proposed.

<sup>1</sup> Entom. zeitung Stettin, 1863, p. 154. Zeller's use, of this name for a genus of *pterophoridae* is also illegitimate, as it has already been applied by Agassiz to a Medusa (Contr. nat. hist. United States, 1862, v. 2, p. 149)

<sup>2</sup> *l. c.*, p. 209.

<sup>3</sup> Used previously in *muscidae*, *pyralidae*, *crustacea*, *mollusca* and *botany*.

<sup>4</sup> Entom. zeitung Stettin, 1867, p. 377.

<sup>1</sup> Hor. Soc. ent. ross., 1882, v. 16, p. 224.

<sup>2</sup> Die Schmetterlinge Deutschlands und der Schweiz, 1865, p. 190.

## DESCRIPTIONS OF SOME NEW NORTH AMERICAN MOTHS.

BY WILLIAM BEUTENMÜLLER, NEW YORK.

### DATANA MODESTA, n. sp.

Head and thoracic patch yellowish ochreous, remaining parts of thorax rusty brown. Primaries rusty brown with a small, elongated, discal spot on the middle of the wing and another smaller spot before the middle. About the apical fourth of the wing is an ill-defined, transverse, curved band a little darker than the ground color. Beyond this band the wing assumes a purplish brownish color. Secondaries much paler than the primaries. Body above yellowish ochreous, beneath pale ochreous. Secondaries beneath pale ochreous, primaries somewhat darker. Expanse 48 mm. 1 ♂. Hab. Kissimmee, Florida, May. Type Collection, Chas. Palm.

Allied to *D. floridana*, but differing from it by having the thoracic patch yellowish ochreous, and by the absence of the two additional transverse bands.

### DATANA PALMI, n. sp.

Head and thoracic patch deep velvety brown, remaining parts of thorax cinnamon brown, mixed with whitish scales. Primaries cinnamon brown (in one specimen nearly as deep in color as *D. angusii*) and thickly covered with whitish scales so as to nearly obscure the ground color. Across the wing are four narrow, transverse bands same as the ground color. The first on the basal fourth, oblique; the second a little before the middle slightly curved; the third a little beyond the middle and